Abstract Submitted
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Excitation spectrum of an ordered Heisenberg antiferromagnet on a triangular lattice[1] SASHA CHERNYSHEV, University of California, Irvine, MICHAEL ZHITOMIRSKY, CEA, Grenoble — We have shown that magnon decays must be prominent in a wide class of noncollinear antiferromagnets. We calculated the decay rate in the spin-1/2 triangular lattice antiferromagnet within the spin-wave theory. In the long-wavelength limit, the life-time of low-energy excitations is predicted to exhibit a non-trivial scaling. For the short-wavelength magnons, the decay rate is large, $2\Im\mathrm{m}\{\tilde{\varepsilon}_{\mathbf{k}}\} \sim 0.4\Re\mathrm{e}\{\tilde{\varepsilon}_{\mathbf{k}}\}$, in a substantial part of the Brillouin zone. Topological transitions of the decay surface also lead to strong singularities in the spectrum that remain essential even for large values of spin. Therefore, excitations in ordered, spin-S, AFs may not necessarily be well-defined for all wave-vectors.

[1] A. L. Chernyshev and M. E. Zhitomirsky, Phys. Rev. Lett. **87**, 207202 (2006).

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